Concepts Tutorials: 4

Wine Bottle & Glass on Tray

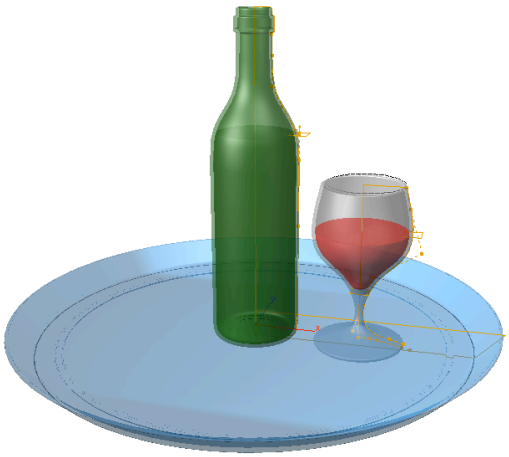


Fig 1. Wine Bottle & Glass on Tray

About this tutorial

Application: Concepts 3D / Concepts Unlimited

Description: In this tutorial we learn to draw profiles, to lathe and to shell solids

Level: Beginner. Requires reading the 'Getting Started' section of the User Manual

Tools:

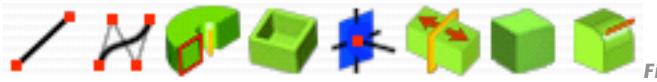


Fig 2. Line, Spline, Solid Lathe, Shell, Infinite Plane, Split Solid, Block Primitive & Blend Edge Feature Tools

Further Information: Please refer to the product User Manual. Additionally, the Concepts User Forum provides discussion and assistance:
www.csi-concepts/conceptsunlimited

Overview

Making the **Bottle & Glass scene** can be broken down into the following process:

1. Drawing the 2D **Profiles** from which to create the 3D.

Note: Only half of the object need be drawn as lathing the profile will generate the other half

2. Using the **Solid Lathe** tool to generate the bottle, glass & tray from their profiles

3. **Shell** out the body of the bottle & glass to an appropriate wall thickness

4. Use the **split solid** tool to create the wine in the glass and the bottle

5. **Blending** the edges of the objects add realistic detail

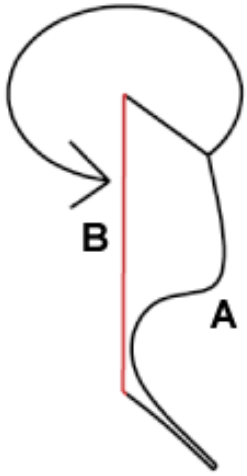


Fig 3. Profile A shown is 'lathed' around axis B

1. Setting Up

- Open Concepts
- Change view to **Front View** (View>front). [Alternately, right-click on the drawing window and use the contextual menu]
- Set the **zoom extents** of your screen by drawing a vertical line from the origin a little longer than the height of the wine bottle. Press the **'e' key** on the keyboard to comfortably fit that line (and thus your model) to your screen.
- You are now ready to draw the **profiles** necessary to create your wine bottle scene

2. Draw Profiles

- First, right-click on the origin and place a horizontal construction line. This will represent our base line. (the surface on which the tray would sit). See **Fig 4** below:

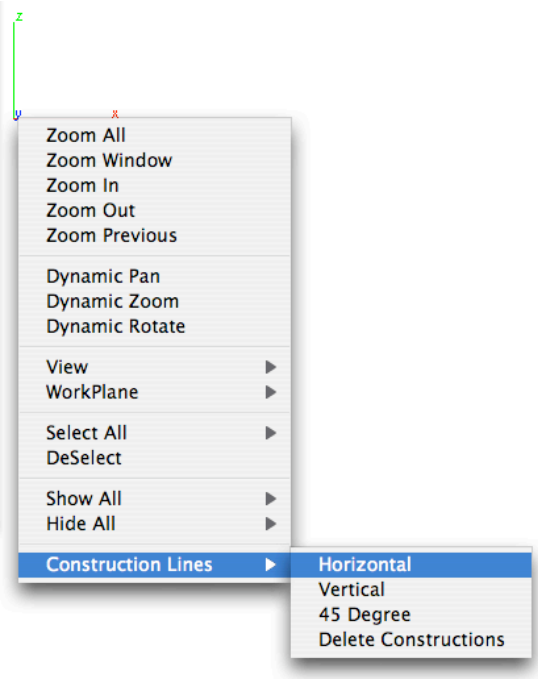
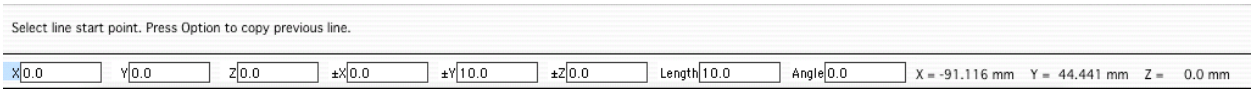


Fig 4. Construction Lines

- Use the line tool to draw the center-line axis of the bottle and the glass. The tray beneath shares the same central axis as the bottle. (ie: the bottle sits right in the middle of the tray)



- Choose the **line** tool from the **tool bar**
- ... click once at the **origin** to start the centre **axis** line for the tray and bottle
- Move the cursor vertically up the screen and click an arbitrary distance from the **origin** making sure you see the helper-line of the intelligent snaps and the align z mark at the origin. Then type the height you wish the bottle to be from the base surface. (We have used a height of 12 inches or 300 mm). The line will adjust to the height you type.
- Move to the right of the bottle axis and draw another vertical line to represent the centre-line axis of the wine glass. The height of the glass should be a little over half the height of the wine bottle. See **Fig 5** below

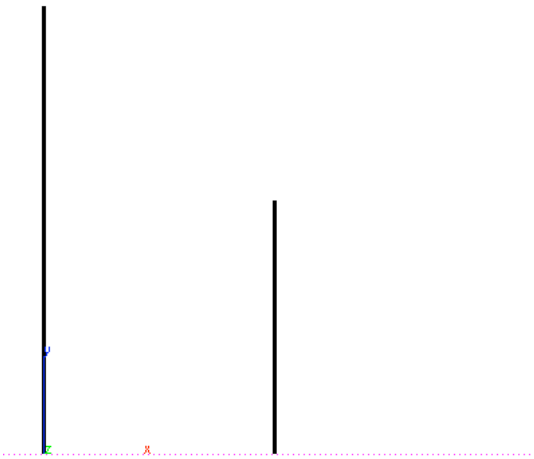


Fig 5. You should now have one construction base-line, one bottle axis and one glass axis

- Use a combination of the **line**, **spline** and **arc** tools to generate the full **profile** of the glass as seen in **Fig 6** below

Fig 6. Glass profile

- Use the same tools to then generate the profiles of the bottle and the tray too. See **Fig 7**. You may find it helps to have a wine bottle and a glass at hand to study their shapes.

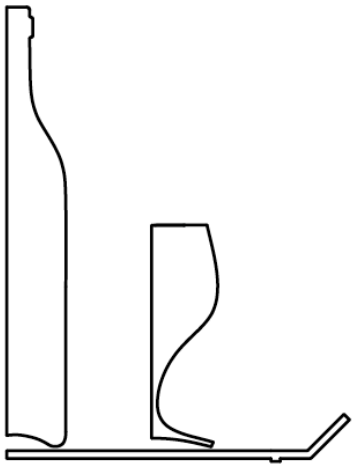
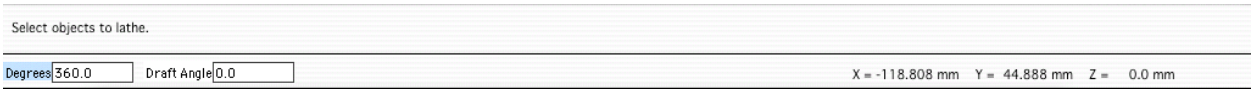


Fig 7. Complete profiles for the bottle, the glass and the tray

- **Note:** Ensure there are not **gaps** in your profiles and that they are **planar.** These are the two factors that can cause a profile to **fail** when used with a tool such as **solid lathe**

4. Next, lathe the profiles into solids

- Choose the lathe solid tool from the **tool bar**



- As ever, follow the **prompts** beneath the **tool name**
- First, a **profile** must be selected. Begin with the glass
- **Note:** Instead of clicking one line at a time, a profile can automatically be traced by **right-clicking** on one of the curves that make up the profile of the glass or the bottle. A **contextual menu** will appear: choose **Select Chain.** Provided your profile is good (ie: there are no **gaps**, **duplicate** lines or **branched** lines), the entire profile will be selected. (Select Chain can be a great time-saver when selecting profiles or testing profiles for gaps).
- After selecting the **profile**, you need to select the line or **axis** around which to lathe it. This is it's **centre-line**. The lathed objects should appear immediately. See **Fig 8**
- After lathing the glass, lathe the bottle and then the tray

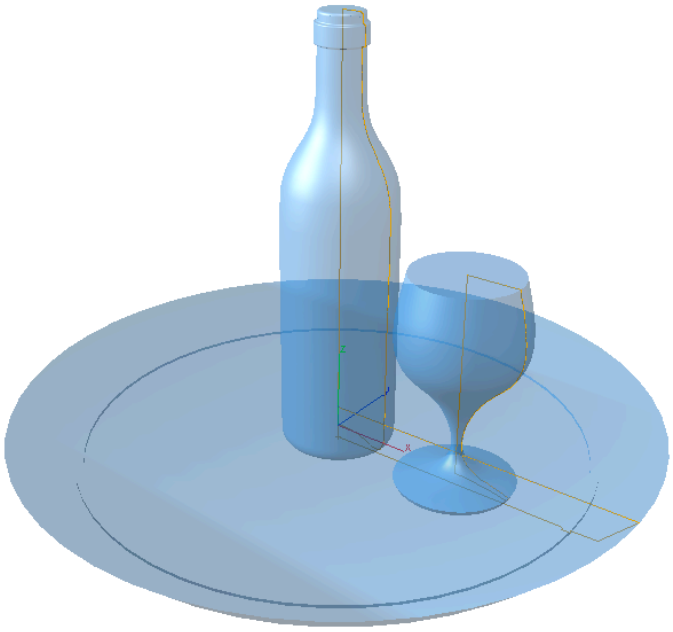
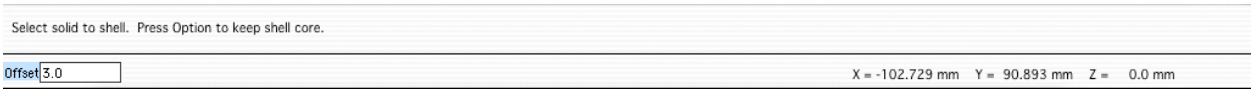


Fig 8. The raw lathed solids are shown here before shelling

5. Shelling your new solids

- The new solids must now be **shelled** to an appropriate wall thickness
- Choose the **shell** tool from the **tool bar**



- Begin with the bottle. Click somewhere on the object
- Then click on the top of the bottle where the opening should be. An **ambiguity pop-up** will appear. Select the appropriate open face from the pop-up. See **Fig 9** below

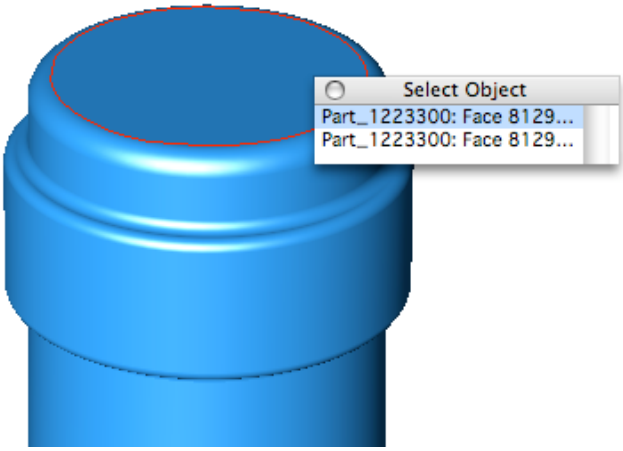


Fig 9. Selecting the open face using the ambiguity pop-up

- **Note:** An **ambiguity pop-up** is a window that appears when you select an object, and there is no one clear face or object that **Concepts** can pick. You must select the appropriate entry.
- **Tool hint:** Press shift if you wish to select multiple open faces. Click on the background (ie no object if you wish to have a hollow object but no open faces). Press the option key to keep the hollowed out section.
- Go on to **shell** the glass. Because the constricted neck shape of a wine glass is difficult for the shell tool to deal with, better results will be achieved if you split the glass at the neck using the infinite plane and split solid tools. Be sure to use a z-station infinite plane at the neck of the glass. See **Fig 10**

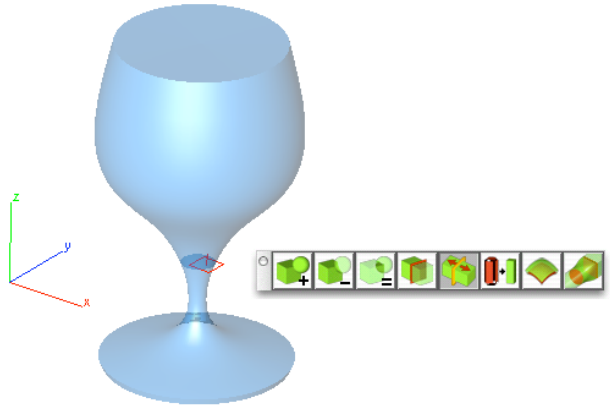


Fig 10 Splitting the glass at the neck allows for a better result from the shell tool

- **Fig 11** shows the shelled bottle and glass

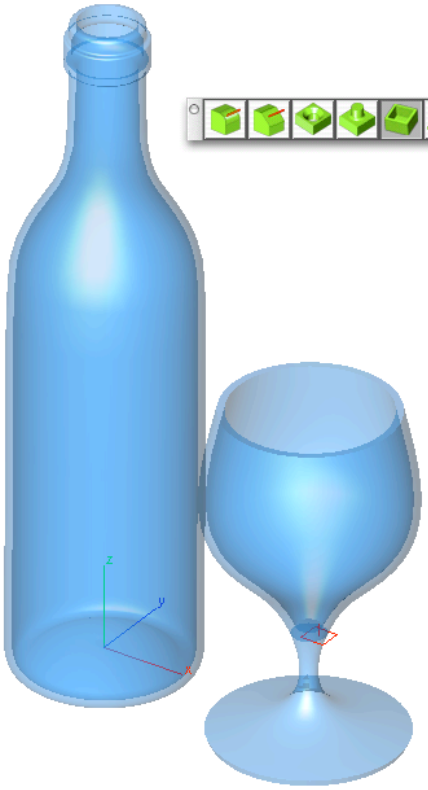


Fig 11 Bottle and glass shelled to an appropriate wall thickness

6. Creating the wine for the glass & bottle

- After shelling the objects, more detail can be added for extra realism. For example, wine can be added to the bottle and to the glass. This is achieved by splitting an overlapping block with

for example, the glass. See **Fig 12** below. As you can see, this results in the block being split into three. Only one of these is needed to represent the wine. Thus the other two can be deleted. The same process can be used to create the wine in the wine bottle.

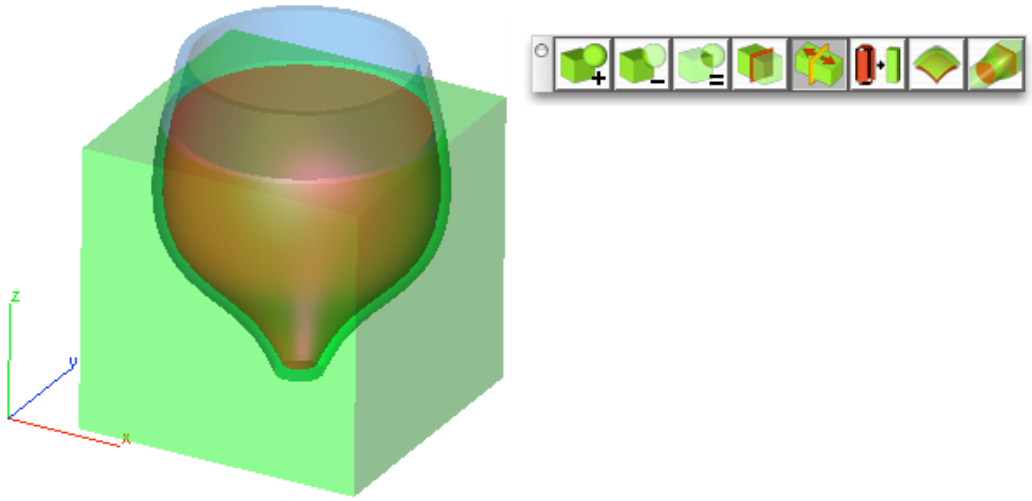
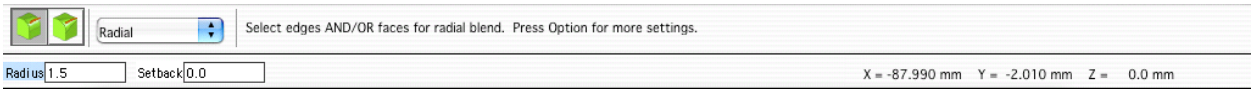


Fig 12. A solid block is split with the wine glass in order to achieve a shape representing the wine

7. Blending edges to add realistic detail

- All that is now left to do is a little **blending**. Softening the hard edges of the objects adds realism to the model, particularly if it is to be **rendered**.
- Choose the **constant blend** tool from the **tool bar**



- Enter an appropriate **radius value** into the input area of the **top bar**
- Following the **prompts** beneath the **tool name**, click on the hard edges of the glass top to apply **constant blends**
- **Note:** A blend **radius value** typically needs to be less than the **material thickness**. On an object like a glass where the blends will be applied to both the inside and outside edges of the material, it is prudent to begin with a blend **radius value** of just less than half the **material thickness**.
- Go on to **blend** the other hard edges of the glass, the edges of the bottle and the edges of the tray

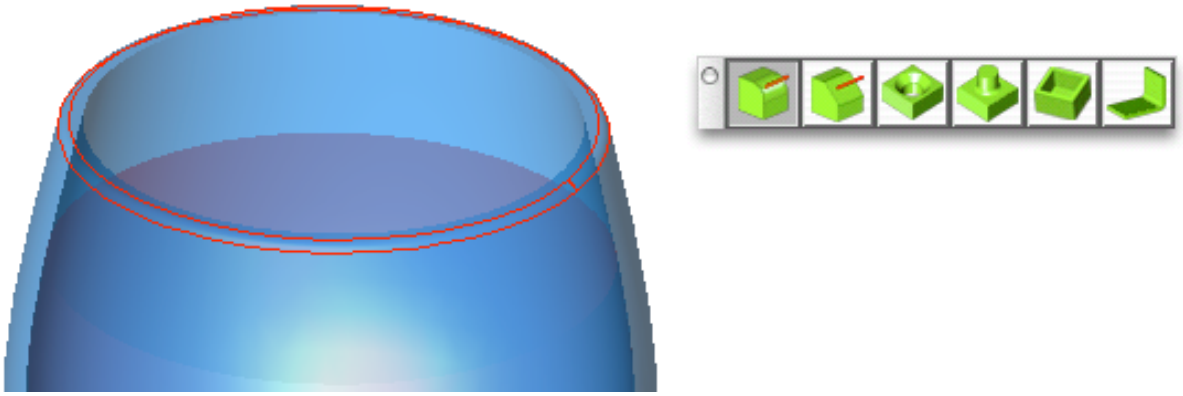


Fig 13. Shows the application of a constant blend to the top edge of the wine glass

- Congratulations, **Fig 14** shows your finished scene!

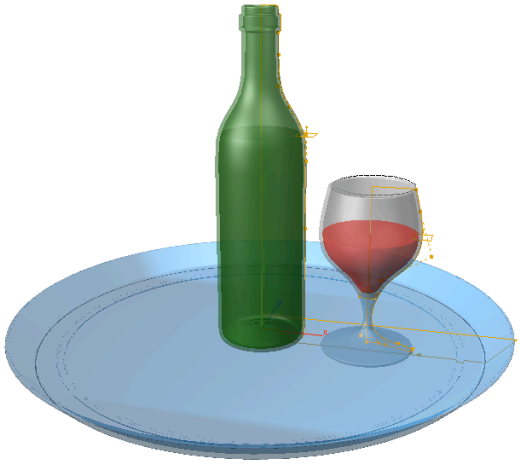


Fig 14. Finished Bottle, Glass & Tray

8. Additional Notes and Comments

- If you have Concepts Unlimited, try rendering the Bottle, Glass & Tray with realistic materials. See **Fig 15** below

- With Concepts Unlimited, you can also use the Model to Sheet tool to generate elevation drawings of (and sections through) the Mug. See **Fig 16**

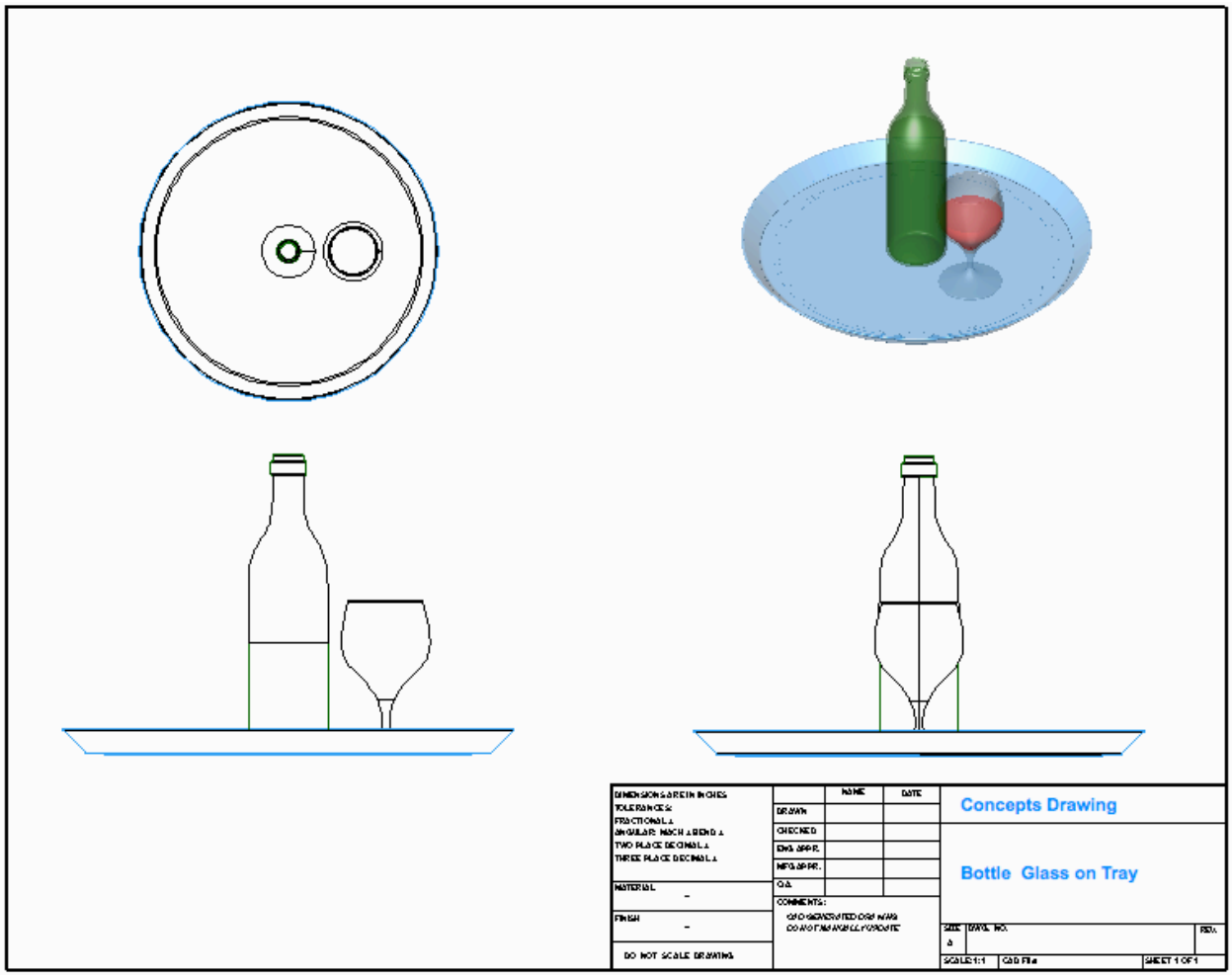


Fig 15. Drawing of the Bottle, Glass & Tray using Model to Sheet in Concepts Unlimited

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